Appendix

Table 1a

Tetrachoric correlations and 95% confidence intervals (CIs) in MZ and DZ twins for the In-MD Criteria

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Zygosity | Correlation | Lower CL | Upper CL |
| dm  | MZ  |  0.357 |  0.222 | 0.492 |
| dm  | DZ  |  0.185 |  0.035 | 0.335 |
| lip  | MZ  |  0.370 |  0.230 | 0.509 |
| lip  | DZ  |  0.176 |  0.020 | 0.333 |
| wp  | MZ  |  0.333 |  0.176 | 0.490 |
| wp  | DZ  |  0.195 |  0.027 | 0.364 |
| sp  | MZ  |  0.270 |  0.110 | 0.430 |
| sp  | DZ  |  0.322 |  0.169 | 0.475 |
| pp  | MZ  |  0.342 |  0.194 | 0.491 |
| pp  | DZ  |  0.208 |  0.046 | 0.371 |
| fa  | MZ  |  0.417 |  0.270 | 0.564 |
| fa  | DZ  |  0.222 |  0.056 | 0.387 |
| fw  | MZ  |  0.353 |  0.181 | 0.526 |
| fw  | DZ  |  0.210 |  0.019 | 0.401 |
| dc  | MZ  |  0.334 |  0.157 | 0.512 |
| dc  | DZ  |  0.113 | -0.086 | 0.312 |
| td  | MZ  |  0.360 |  0.110 | 0.611 |
| td  | DZ  |  0.132 | -0.182 | 0.447 |

Table 1b

Tetrachoric correlations and 95% confidence intervals (CIs) in MZ and DZ twins for the Out-MD Criteria

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Zygosity | Correlation | Lower CL | Upper CL |
| dm  | MZ  |  0.207 |  0.120 | 0.294 |
| dm  | DZ  |  0.026 | -0.081 | 0.133 |
| lip  | MZ  |  0.138 |  0.034 | 0.242 |
| lip  | DZ  |  0.098 | -0.028 | 0.223 |
| wp  | MZ  |  0.302 |  0.218 | 0.387 |
| wp  | DZ  |  0.117 |  0.011 | 0.222 |
| sp  | MZ  |  0.202 |  0.103 | 0.301 |
| sp  | DZ  |  0.040 | -0.079 | 0.159 |
| pp  | MZ  |  0.192 |  0.089 | 0.295 |
| pp  | DZ  |  0.036 | -0.088 | 0.159 |
| fa  | MZ  |  0.189 |  0.091 | 0.287 |
| fa  | DZ  |  0.134 |  0.016 | 0.252 |
| fw  | MZ  |  0.151 |  0.007 | 0.295 |
| fw  | DZ  |  0.242 |  0.093 | 0.391 |
| dc  | MZ  |  0.237 |  0.103 | 0.370 |
| dc  | DZ  |  0.023 | -0.144 | 0.190 |
| td  | MZ  |  0.207 |  0.051 | 0.363 |
| td  | DZ  |  0.175 |  0.013 | 0.337 |

Table 1c

Tetrachoric correlations and 95% confidence intervals (CIs) in MZ and DZ twins for the cross correlations for in-MD symptoms in one twin and the out-MD symptom in the cotwin

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Criteria | Zygosity | Correlation | Lower CL | Upper CL |
| dm  | MZ  |  0.148 |  0.029 | 0.268 |
| dm  | DZ  | -0.014 | -0.146 | 0.118 |
| lip | MZ  |  0.131 | -0.003 | 0.265 |
| lip  | DZ  |  0.094 | -0.049 | 0.236 |
| wp  | MZ  |  0.040 | -0.097 | 0.177 |
| wp  | DZ  |  0.063 | -0.079 | 0.205 |
| sp  | MZ  |  0.128 | -0.007 | 0.262 |
| sp  | DZ  |  0.033 | -0.113 | 0.178 |
| pp  | MZ  |  0.089 | -0.050 | 0.228 |
| pp  | DZ  |  0.045 | -0.099 | 0.189 |
| fa  | MZ  |  0.072 | -0.071 | 0.215 |
| fa  | DZ  |  0.072 | -0.071 | 0.215 |
| fw  | MZ  |  0.241 |  0.077 | 0.405 |
| fw  | DZ  |  0.089 | -0.096 | 0.274 |
| dc  | MZ  |  0.123 | -0.061 | 0.306 |
| dc  | DZ  |  0.073 | -0.106 | 0.252 |
| td  | MZ  |  0.411 |  0.226 | 0.597 |
| td  | DZ  |  0.211 | -0.017 | 0.439 |

Table 2: Model fitting results for univariate ACE model for 9 “IN” classified MDD symptoms

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| base  | comparison  | ep  | minus2LL  | df  | AIC  | Diff LL  | Diff df  | p |
| iDM  | --  |  4 | 3552 | 5682 | -7812 |  .  | . |  . |
| iDM  | idmAE  |  3 | 3552 | 5683 | -7814 | -0.000 | 1 | 1.000 |
| iDM  | idmCE  |  3 | 3555 | 5683 | -7811 | 3.622 | 1 | 0.057 |
| iLIP  | --  |  4 | 3333 | 5682 | -8031 |  .  | . |  . |
| iLIP | ilipAE  |  3 | 3333 | 5683 | -8033 | 0.000 | 1 | 1.000 |
| iLIP | ilipCE  |  3 | 3337 | 5683 | -8029 | 4.042 | 1 | 0.044 |
| iwp  | --  |  4 | 2980 | 5682 | -8384 |  .  | . |  . |
| iwp  | iwpAE  |  3 | 2980 | 5683 | -8386 | 0.026 | 1 | 0.873 |
| iwp  | iwpCE  |  3 | 2982 | 5683 | -8384 | 1.956 | 1 | 0.162 |
| isp  | --  |  4 | 3065 | 5681 | -8297 |  .  | . |  . |
| isp  | ispAE  |  3 | 3069 | 5682 | -8295 | 3.745 | 1 | 0.053 |
| isp  | ispCE  |  3 | 3065 | 5682 | -8299 | 0.000 | 1 | 1.000 |
| ipp  | --  |  4 | 3126 | 5682 | -8238 |  .  | . |  . |
| ipp  | ippAE  |  3 | 3126 | 5683 | -8240 | 0.071 | 1 | 0.790 |
| ipp  | ippCE  |  3 | 3128 | 5683 | -8238 | 1.983 | 1 | 0.159 |
| ifa  | --  |  4 | 2932 | 5682 | -8432 |  .  | . |  . |
| ifa  | ifaAE  |  3 | 2932 | 5683 | -8434 | 0.000 | 1 | 1.000 |
| ifa  | ifaCE  |  3 | 2936 | 5683 | -8430 | 4.111 | 1 | 0.043 |
| ifw  | --  |  4 | 2494 | 5682 | -8870 |  .  | . |  . |
| ifw  | ifwAE  |  3 | 2494 | 5683 | -8872 | 0.037 | 1 | 0.848 |
| ifw  | ifwCE  |  3 | 2496 | 5683 | -8870 | 1.637 | 1 | 0.201 |
| idc  | --  |  4 | 2533 | 5682 | -8831 |  .  | . |  . |
| idc  | idcAE  |  3 | 2533 | 5683 | -8833 | 0.000 | 1 | 1.000 |
| idc  | idcCE  |  3 | 2536 | 5683 | -8830 | 2.833 | 1 | 0.092 |
| itd  | --  |  4 | 1472 | 5682 | -9892 |  .  | . |  . |
| itd  | itdAE  |  3 | 1472 | 5683 | -9894 | -0.000 | 1 | 1.000 |
| itd  | itdCE  |  3 | 1473 | 5683 | -9893 | 1.413 | 1 | 0.235 |
| “I” stands for “In.” LL – loglikelihood. Diff – difference in; DF – degrees of freedom. For other abbreviations, see the manuscript table 1.  |

Table 2: Model fitting results for univariate ACE model for 9 “OUT” classified MDD symptoms

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| base  | comparison  | ep  | minus2LL  | df  | AIC  | Diff LL  | Diff df  | p |
| oDM  | --  |  4 | 6708 | 5682 | -4656 |  .  | . |  . |
| oDM  | odmAE  |  3 | 6708 | 5683 | -4658 | 0.000 | 1 | 1.000 |
| oDM  | odmCE  |  3 | 6713 | 5683 | -4653 | 4.725 | 1 | 0.030 |
| olip  | --  |  4 | 5383 | 5682 | -5981 |  .  | . |  . |
| olip  | olipAE  |  3 | 5383 | 5683 | -5983 | 0.174 | 1 | 0.677 |
| olip  | olipCE  |  3 | 5383 | 5683 | -5983 | 0.226 | 1 | 0.634 |
| owp  | --  |  4 | 6577 | 5682 | -4787 |  .  | . |  . |
| owp  | owpAE  |  3 | 6577 | 5683 | -4789 | 0.000 | 1 | 0.999 |
| owp  | owpCE  |  3 | 6584 | 5683 | -4782 | 6.874 | 1 | 0.009 |
| osp  | --  |  4 | 5726 | 5681 | -5636 |  .  | . |  . |
| osp  | ospAE  |  3 | 5726 | 5682 | -5638 | 0.000 | 1 | 1.000 |
| osp  | ospCE  |  3 | 5730 | 5682 | -5634 | 3.371 | 1 | 0.066 |
| opp  | --  |  4 | 5486 | 5682 | -5878 |  .  | . |  . |
| opp  | oppAE  |  3 | 5486 | 5683 | -5880 | 0.000 | 1 | 1.000 |
| opp  | oppCE  |  3 | 5489 | 5683 | -5877 | 2.892 | 1 | 0.089 |
| ofa  | --  |  4 | 5696 | 5682 | -5668 |  .  | . |  . |
| ofa  | ofaAE  |  3 | 5696 | 5683 | -5670 | 0.302 | 1 | 0.583 |
| ofa  | ofaCE  |  3 | 5697 | 5683 | -5669 | 0.552 | 1 | 0.458 |
| ofw  | --  |  4 | 3654 | 5682 | -7710 |  .  | . |  . |
| ofw  | ofwAE  |  3 | 3657 | 5683 | -7709 | 2.957 | 1 | 0.086 |
| ofw  | ofwCE  |  3 | 3654 | 5683 | -7712 | -0.000 | 1 | 1.000 |
| odc  | --  |  4 | 3749 | 5682 | -7615 |  .  | . |  . |
| odc  | odcAE  |  3 | 3749 | 5683 | -7617 | 0.000 | 1 | 1.000 |
| odc  | odcCE  |  3 | 3752 | 5683 | -7614 | 2.778 | 1 | 0.096 |
| otd  | --  |  4 | 3294 | 5682 | -8070 |  .  | . |  . |
| otd  | otdAE  |  3 | 3295 | 5683 | -8071 | 0.501 | 1 | 0.479 |
| otd  | otdCE  |  3 | 3294 | 5683 | -8072 | 0.157 | 1 | 0.691 |
| “O” stands for “out.” LL – loglikelihood. Diff – difference in; DF – degrees of freedom. For other abbreviations, see the manuscript table 1.  |

Table 3: Model fitting results for bivariate ACE model for the 9 “IN-OUT” paired MDD symptoms

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| base  | comparison  | ep  | minus2LL  | df  | AIC  | Diff LL  | Diff df  | p |
| ioDM | --  | 11 | 9906 | 11369 |  9928 |  .  | . |  . |
| ioDM | iodmAE |  8 | 9908 | 11372 |  9924 |  2.070 | 3 | 0.558 |
| ioDM | iodmCE |  8 | 9917 | 11372 |  9933 | 10.990 | 3 | 0.012 |
| iolip | --  | 11 | 8546 | 11369 |  8568 |  .  | . |  . |
| iolip | iolipAE |  8 | 8547 | 11372 |  8563 | 0.531 | 3 | 0.912 |
| iolip | iolipCE |  8 | 8555 | 11372 |  8571 | 8.306 | 3 | 0.040 |
| iowp | --  | 11 | 9462 | 11369 |  9484 |  .  | . |  . |
| iowp | iowpAE |  8 | 9466 | 11372 |  9482 | 4.040 | 3 | 0.257 |
| iowp | iowpCE |  8 | 9471 | 11372 |  9487 | 9.020 | 3 | 0.029 |
| iosp | --  | 11 | 8675 | 11367 |  8697 |  .  | . |  . |
| iosp | iospAE |  8 | 8679 | 11370 |  8695 | 4.650 | 3 | 0.200 |
| iosp | iospCE |  8 | 8681 | 11370 |  8697 | 6.660 | 3 | 0.084 |
| iopp | --  | 11 | 8529 | 11369 |  8551 |  .  | . |  . |
| iopp | ioppAE |  8 | 8533 | 11372 |  8549 | 4.090 | 3 | 0.252 |
| iopp | ioppCE |  8 | 8544 | 11372 |  8560 | 14.730 | 3 | 0.002 |
| iofa | --  | 11 | 8514 | 11369 |  8536 |  .  | . |  . |
| iofa | iofaAE |  8 | 8517 | 11372 |  8533 | 2.370 | 3 | 0.499 |
| iofa | iofaCE |  8 | 8520 | 11372 |  8536 | 5.340 | 3 | 0.148 |
| iofw | --  | 11 | 6097 | 11369 |  6119 |  .  | . |  . |
| iofw | iofwAE |  8 | 6100 | 11372 |  6116 | 3.560 | 3 | 0.313 |
| iofw | iofwCE |  8 | 6102 | 11372 |  6118 | 5.240 | 3 | 0.155 |
| iodc | --  | 11 | 6266 | 11369 |  6288 |  .  | . |  . |
| iodc | iodcAE |  8 | 6269 | 11372 |  6285 | 2.760 | 3 | 0.430 |
| iodc | iodcCE |  8 | 6273 | 11372 |  6289 | 7.310 | 3 | 0.063 |
| iotd | --  | 11 | 4715 | 11369 |  4737 |  .  | . |  . |
| iotd | iotdAE |  8 | 4717 | 11372 |  4733 | 1.820 | 3 | 0.611 |
| iotd | iotdCE |  8 | 4717 | 11372 |  4733 | 1.470 | 3 | 0.690 |
| “I” stands for “in”; “O” stands for “out.” LL – loglikelihood. Diff – difference in; DF – degrees of freedom. For other abbreviations, see the manuscript table 1.  |

Figure 1: MZ and DZ twin tetrachoric correlations with 95% CIs for 9 OUT-OUT MD criteria (dropping positive OUT criteria that co-occurred in a temporal cluster with 3 other MD criteria)

